

Feb. 6, 1931

Dear Charlie,

I had a long typewritten letter partly completed but got to feeling tired & have come home to bed. After several days here I am nearly fully recovered but must apologize for being so late in writing. I realized there was no need to elaborate that I could not do justice except for a long letter giving you the facts. I have not my cards home here but will send you some of the stuff.

Many thanks for your letter. I have already heard from Anderson & have sent in my application.

Stadler, not knowing of my desire for a fellowship, asked me to work at Missouri this summer at a salary of \$500 for the two months. I can work on what I please but he wants me to tackle some of the deficiency stuff. I rather think I shall go there. Things may be in a mess here but with the new building conditions our group's work will be lost. It will be a good time to go. I am sorry for Harriet working on many alone. After Missouri this summer I expect to come back to C. U. T get my corn ready - that which will be grown & pollinate for me here. I want to get the theories along

I have grown material (about 25-30 heads for each ear) of 46 & 464 which was giving peculiar ratios per pair. I did not get any 2n+1 individuals. Looks bad for pr + D₂. However I have the other Chromosome isolates I think. Your B 11₍₁₃₎ × C-d-uy
(D₂+c-d-w-etc)

Gave 270₍₁₁₎ which was sterile & 1290 (sterile).

When (1) it gave peculiar ratios for c. d- + uy.

I have at my cards here but the interchanges Chromosome was found to be C 84 by me.

The heads of 270₍₁₁₎ were grown; gave 388.

There were about 12 2n+1 individuals. All but one of these were partially sterile (1290 or so). One

individual^(388F) was 2n+1, 3.5% sterile, & gave some inheritance for d- + uy. One would expect 3 types of 2n+1 from 270₍₁₁₎ which was probably a 2n + one interchange Chromosome (I will let you know which one by March, I hope). The males in 270₍₁₁₎ would

give 16 + % sterility. $\frac{1}{4} - \frac{1}{4} = \frac{1}{2}$ would give no sterility. Or. I shall send you my calculation.

When I leave a chance at my cards. Any way,

I thought 388F, might be a mistake but this seems to be giving 2n+1 individuals. This looks as if there were no mistakes. I should feel confident until I have a 2n+1 to an n + n₂. I have crossed 388F, to Gramine Chromosome which was pr. If pr is involved

I ought to get 2n+1's going. Shall I send you

some kernels of this ear? It should be worked right away for its tissue + sterile value.

Since 388 culture contains m + tubercles also. Which has C-shr. on it? have crossed out the potato & turnip frame also. I hope to be able to tell which piece carries the c-shr. genes. Has Beadle made any pollen counts on the C-shr. strains & sent them? They material hasn't come along yet. I am anxious for a verification.

I was very much pleased about the D₃ + the 4-th smallest chromosome, #7. Q nice correlation! Were there 2n+1 also partially sterile? In this, perhaps, a certain part of the chrom. which is not possible for the nucleus appearance of the plants? With the different ~~chromosomes~~ steriles involving this chromosome, we might be able to segregate the come to a small part of the chromosome, not the whole chromosome. Were young, counts made on these individuals which were non-sterile or partially sterile, i.e., is there any chance that the st. might be on a piece ~~not~~ present in that particular thorax. I am growing present in that particular thorax. I am growing #7 heterozygous for st. now. Also expect to cross chocolate perhaps to #7. Do so at Col. Fall if you can. Also cross chocolate perhaps to #5 (6th smallest) if you can. I shall try to do it but Brown has very little room this year due to blight - want of the houses + the use of one house for blight more's potatoes. We may not have material ready at the

right time.

I am well interested in the progress of the studies.
How is the cytology coming? I believe everything is OK
from all your reports. Things here are dead except
for a few pines. There is some sprouting ($8' + 1''$) in
boglands. I am going to ask to see the slides. It
should be worked in every workplace for texture & letter
of chromosomes. Do Beadle & Tatum do this for *Aspergillus*
& the C. subsp. Tetradymia Heteromorpha & the "imparis"
large-small pair? I hope so. I believe also that
the wheat situation can be solved better that way than
the way they are going about it. Have spoken to
William Hollingshead about it. I believe that
metaphase chromosomes are not at all fully reliable
indices of relation of chromosomes. That is, 2 plates
may have similar chromosomes or quite different.
Even some of the "similar" chromosomes the chromosomes
may be comparable but the metaphase morphology of the
chromosomes may be somewhat different. See
chromosomes of Gramineae in Cary.
idea is based on the paternal chromosome in Cary.
At metaphase the relative length of the 2 arms is
about — but at prophase it is nearly —
The deep staining part attached to the nucleoles adds
greater length to the chromosome at metaphase than
at similar linear length of prophase chromosome adds
to the metaphase chromosome. Of the gramineous on the
chromosomes do the same thing the differences
in the staining length of chromosomes may be accounted

for without assuming so much manufacturing of
new elongation or development of the chromosomes
of the complement. My idea being, the amount
of stain off substance is not necessarily an
index of the amount or quality of substance which
can be compared, one chromosome per divisor.
We are very ignorant of the nature of chromosomes,
chromosomes, etc. Especially are we ignorant of
the manner of contraction of the chromosomes.
Bellini has made some plots of it but so far
he is too erratic. Theory blows him slightly.

I am going to try Feulgen reaction on fern cells
this spring if I can. We have a terrible herb in
botany this year - 6 labs. Dr. Slay is going
to take 2 labs. The 6 labs we had last year were
the cause of my poor summer & lackadaisical
fall. I have done nothing for days. I am
going to take it easier in lab. & save some energy
for the corn.

My talk at the meetings went over beautifully.
I showed lantern slides & the photo graphs. They were
very condescending to the pictures almost of whom are not
accustomed to seeing chromosomes clearly. I was
showing the Corn (plumule one from
the shot showing the Cern (plumule one from
which the 3 plots were taken) with me & used it
as a demonstration. There was no difficulty in
showing them forth slides showed up beautifully.
I brought along the green filters. I spent many hours
getting my lantern slide just right but it paid.

I think I have written enough. I am writing half flattened out in bed. My scroll is most unreadable. I don't expect you'll get it all.

I have one more idea which I think is new.

It may work. I am wondering about the nature of the secondary constrictions. I feel strongly that some of them are related to the pedicle of the satellite. A satellite is produced if the ~~end~~ attachment of the chromosome to the nucleolus is near the end of the chromosome. The nearer this end (or the smaller the chromosome on the end pair) the smaller the satellite. At metaphase, the pedicle of the satellite is similar to a secondary constriction. If the attachment were farther down in the chromosome the metaphase chromosome would not have so much of a "satellite" appearance but would have a secondary constriction. I do not think ^{all} secondary constrictions are adjacent to nucleoli. Secondary constrictions are adjacent to spindle fiber attachment regions. I spoke to Harriet about it. She went to her slides. She does not have any secondary constriction ~~in~~. It looks more than suspicious that this ^{one} ~~one~~ ^{is} related to the nucleolus. It is a secondary constriction is related to the nucleolus. It is a secondary constriction even if it proves to be untrue. Logical conclusion even if it proves to be untrue.

Harriet has just come with her mail. She is going down with very bad cold. We both were out & the same dinner party + probably got the same intestinal bug. She is just succumbing tho + I am just getting better. I have not half completed what I wish to tell you but have tried your patience enough - Sincerely, Bart.